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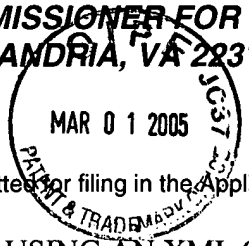
Docket No. AM9-99-0247
(PATENT)



SIR: MAR 0 1 2005

Transmitted for filing in the Application of M. Carey et al. Serial No.: 09/531,802

Title: USING AN XML QUERY LANGUAGE TO PUBLISH RELATIONAL DATA AS XML

are the following:

Change of Correspondence	Information Disclosure Statement
Formal drawing sheets	Declaration and Power of Attorney
Amendment After Final	Assignment of the Invention ($40.00)
Response/Amendment	Notice to File Missing Parts ($130.00)
✔ Response to Notice of Noncompliance	Petition for Extension of Time ($110.00)
Letter to Drawing Review Branch	Issue Fee ($1,290.00)
Certificate of Correction	Notice of Appeal ($300.00)
Other : *Recordation of Assignment Cover Sheet*	✔ Appeal Brief in triplicate

NO ADDITIONAL FEE IS REQUIRED

OTHER THAN A SMALL ENTITY	Claims Remaining After Amendment	Highest No. Previously Paid for	Extra	Rate	Additional Fee
SUBTOTAL FROM ABOVE					$ 0.00
TOTAL CLAIMS			0	x 18 =	
INDEPENDENT CLAIMS			0	x 86 =	0.00
MULTIPLE DEP. CLAIM PRESENTED				+290 =	
				TOTAL	$ 0.00

Please charge my Deposit Account No. 09-0441 in the amount of $0.00. A duplicate copy of this sheet is attached.

The Commissioner is hereby authorized to charge payment for any additional filing fees required under 37 CFR 1.16 or any patent application processing fees under 37 CFR 1.17 in association with this communication or credit any overpayment to Deposit Account No. 09-0441. A duplicate copy of this sheet is attached.

CERTIFICATE OF MAILING

I hereby certify that the above paper/fee is being deposited with the United States Postal Service as first class mail in an envelope addressed with sufficient postage to Commissioner for Patents, Mail Stop Appeal Brief, P.O. Box 1450, Alexandria, VA 22313-1450

Date of Deposit: February 25, 2005

Person mailing paper/fee: Marc D. McSwain

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Respectfully submitted,
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	February 25, 2005
M. Carey et al.		
Group Art Unit: 2177	:	Examiner: S. R. Pannala
Serial No.: 09/531,802	:	Filed: 03/21/2000
Attorney Docket: AM9-99-0247	:	Confirmation No.: 6497

Title: USING AN XML QUERY LANGUAGE TO PUBLISH RELATIONAL DATA AS XML

RESPONSE TO NOTICE OF NON-COMPLIANT APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This paper is in response to a Notice of Non-Compliance mailed on January 31, 2005 for this application. A compliant appeal brief is submitted herewith.

Respectfully submitted,

Michael James Carey et al.

By Marc D. McSwain

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Agent for Applicants

(408)927-3364

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	February 25, 2005
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Title: USING AN XML QUERY LANGUAGE TO PUBLISH RELATIONAL DATA AS XML

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal brief is submitted under 35 U.S.C. 134, further to Appellant's Notice of Appeal filed on July 14, 2004.

(1) Real Party in Interest

The real party in interest is IBM Corporation.

(2) Related Appeals and Interferences

No interferences relating to this application or appeal exist. This application is the parent of commonly-owned application U.S. Ser. No. 09/810,167, for which an appeal brief was filed on August 13, 2004.

(3) Status of Claims

Claims 1-44 are pending and are appealed herein.

(4) Status of Amendments

All amendments have been entered.

(5) Summary of Invention

Briefly, as set forth in the specification, e.g., in the abstract, in Claims 1, 22, 43, and 44, on page 4 lines 4-14 and in Figure 9, the present invention is a method, apparatus, and computer program product for publishing relational data as XML by translating XML queries into queries against an relational database. Conversion of the relational database into an XML database is not required. Each relational table is mapped to a virtual XML document, and XML queries are issued over these virtual documents. An XML query is parsed and transformed into a language-neutral intermediate representation, which is a sequence of operations describing how the

output document is derived from the underlying relational tables. The intermediate representation is then translated into an SQL query over the underlying relational tables and into instructions for a tagger. The SQL query is executed, and the SQL query results are then fed into the tagger, which follows tagger instructions to generate the marked up output.

(6) Issues

(a) Whether claims 1-13, 17-34, and 38-44 are unpatentable under 35 U.S.C. 102(b) as anticipated by U.S. Pat. No. 6,480,860 (referred to hereafter as Monday).

(b) Whether claims 14-16 and 35-37 are unpatentable under 35 U.S.C. 103(a) over Monday and in view of U.S. Pat. No. 6,507,856 (referred to hereafter as Chen).

(7) Grouping of Claims

The claims are appealed in two groups: (1) 1-13, 17-34, and 38-44, and (2) 14-16 and 35-37.

(8) Argument

(a) Claims 1-13, 17-34 and 38-44

Independent claims 1, 22, 43, and 44 differ essentially only in form and are described together below, including references to relevant portions of the specification that support these claims. Dependent claims 2-13 and 17-21 differ essentially only inform from claims 23-34 and 38-42. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a

single prior art reference. See MPEP 2131. Applicants assert this standard has not been met by the cited prior art.

Regarding claim 1, for example, each claimed element is supported by at least the following portions of the specification:

- automatically mapping each table in a relational database to a virtual XML document (the Default View), page 9, line 20, page 10, lines 1-7, Fig 3.
- using an XML query over the Default View as the means to extract and mark up relational data. Tables in the underlying database are queried in an XML query language as if they were XML documents, page 10, lines 9-17, Fig 4.
- transforming XML queries into an "intermediate representation", which describes how the underlying relational data should be selected, marked up, grouped, and nested to generate the desired XML document, page 10, lines 19-21, page 11, lines 1-21, Fig 5.
- rewriting the intermediate representation into a) a query part that can be executed as a SQL query and b) a tagger part that can be executed by a tagging engine, page 13, lines 5-20, Fig 6, Fig 7.
- translating the rewritten intermediate representation into SQL query and tagger instructions, page 14, lines 8-20, Fig 8.
- executing the SQL query and its streaming results into a tagging engine, which produces the resulting XML document, page 15, lines 6-20, page 16, lines 1-12, Fig 9.

During prosecution, Applicants provided a point-by-point refutation of the Examiner's assertions:

- "mapping a number of relational database tables to a number of virtual XML documents". Monday teaches a Java Bean being used to access the underlying

database. There is no explicit or implied notion of mapping a relational database to a virtual XML document that can then be used in an XML query, as described in the present application. In the final office action, the Examiner disagrees with this argument, and asserts that the XML translator (Monday, Fig. 2, item 226) is capable of performing the intended use of the present invention. The Examiner's assertion is incorrect because Monday and the present invention are structurally different in the use of virtual XML documents (the invention has them, Monday does not).

- "issuing XML queries over said virtual XML documents" and "parsing said XML queries". Monday says nothing at all about how an XML query language could be used as the means to extract data from a relational database, as described in the present application. The Examiner has not responded to this point, except to repeat the rejections.

- "It transforming (sic) said XML queries into a language-neutral intermediate representation". Monday states only that there is a "software program that bridges the gap between the markup language interface and database" (col 5, lines 25-31). Monday says nothing about an intermediate representation like the one described in the present application, with BIND, GROUP, CONSTRUCT, etc. In the final office action, the Examiner disagrees with this argument, and cites portions of Monday that describe XML document construction and dynamic DTD generation in general terms. The Examiner's assertion is incorrect because Monday fails to teach a language-neutral intermediate representation as taught and claimed in the present invention. The Examiner has not responded to arguments regarding the remaining assertions, except to repeat the rejections:

- "rewriting said language-neutral intermediate representation into an equivalent form easily translated into a SQL query" and "translating said equivalent form into a SQL query over said relational database tables and into tagging instructions passed to a tagger" and "executing said SQL query to produce SQL query results passed to said tagger" and "generating XML output using said SQL query results and said tagging instructions". Monday says nothing at all about an intermediate representation of an XML query, how to generate SQL from an intermediate representation, or a tagger that can take a stream of rows from said SQL query and generate a result XML document. In contrast, the specification of the present invention describes a scheme to rewrite the intermediate representation into a) a query part that can be executed as a SQL query and b) a tagger part that can be executed by a tagging engine.

Also, Monday's method will only work for single data objects, like Java Beans (Fig 2 and Fig 3). Their Data Request method is not general enough to work on relational tables, where each row has to be selected, marked up, grouped, and nested. In particular, the algorithm shown in Fig 4 cannot select the rows of a table, individually mark them, then group and nest them within the marked up rows of another table. In contrast, the present application describes an intermediate representation, along with rewrite and translation algorithms for that intermediate representation to deal with this problem.

In general, database access in Monday is made explicit with a "Data Request", which is basically an annotated DTD (see Fig 6, col 8, lines 47-65 of Monday). There is no notion a Default View, where the tables of a relational database can be viewed by users as virtual XML documents that can be queried with an XML query language.

Further, Monday's Data Request method relies on data objects like Java Beans to access the database (see Figs 2-3, col 7, lines 42-67 of Monday). An XML query language is not used to as the means to request data. Hence, Monday does not describe or anticipate a method to transform an XML query into an intermediate representation, which is in turn rewritten and translated into a SQL query and tagger instructions.

(b) Claims 14-16 and 35-37

Claims 14-16 differ from claims 35-37 essentially only in form and are described together below, including references to relevant portions of the specification that support these claims. Claim 14 is described from page 11 line 20 to page 12 line 3, and page 13 line 1. Claim 15 is described on age 13 lines 9-18, and claim 16 is described on page 14 lines 1-2.

The rejections under 35 U.S.C. 103(a) based on Monday and Chen are invalid. Monday and Chen are only available as prior art under 35 U.S.C. 102(e). Quoting MPEP 706.02(l)(1):

"Effective November 29, 1999, subject matter which was prior art under former 35 U.S.C. 103 via 35 U.S.C. 102(e) is now disqualified as prior art against the claimed invention if that subject matter and the claimed invention "were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person." This change to 35 U.S.C. 103(c) applies to all utility, design and plant patent applications filed on or after November 29, 1999."

Quoting MPEP 706.02(l)(2):

"The term "commonly owned" is intended to mean that the subject matter

which would otherwise be prior art to the claimed invention and the claimed invention are entirely or wholly owned by the same person(s) or organization(s) at the time the claimed invention was made."

Monday and Chen and the above-identified patent application under appeal were, at the time the invention of the present patent application was made, subject to an obligation of assignment to IBM Corporation. Monday and Chen and the present patent application have in fact both been assigned to IBM Corporation. The assignment of the present invention was recorded at reel 10682 and frame 1 on March 21, 2000. The assignment of Monday was recorded at reel 9775 and frame 491 on February 11, 1999, and the assignment of Chen was recorded at reel 9694 and frame 812 on January 5, 1999.

More substantively, Chen describes a merge algorithm, which takes an input XML document in one format (the "input DTD"), a format specification for return XML documents (the "return DTD"), and a "name tag map". The merge algorithm uses these to transform an input XML document into a return XML document (see Fig 7, col 4, lines 40-54, Fig 11A-11E, col 8, lines 20-35 of Chen). However, the merge algorithm in Chen does not use an XML query language as the means to request and markup relational data. Hence, Chen neither teaches nor suggests transforming an XML query into an intermediate representation, which is in turn rewritten and translated into a SQL query and tagger instructions. Further, Chen starts with a marked up input XML document, not unmarked, raw relational data. Thus, Chen neither teaches nor suggests a method that can markup data from relational tables, where each row of a table is marked up, grouped and nested as described in the

present application.

While it is true that Chen describes how to group and nest, this is only in the context of transforming an input XML document to a return XML document, while working with a return DTD and name table map. Chen neither teaches nor suggests how to group and nest raw relational data from a SQL query, as in the present invention, and the addition of Monday does not remedy this shortcoming.

Monday and Chen say nothing about an intermediate representation like the one described in the present application, with BIND, GROUP, CONSTRUCT, etc. They also say nothing about rewrite rules to transform an intermediate representation into a) a query part that can be executed as a SQL query and b) a tagger part that can be executed by a tagging engine. The intermediate representation and rewrite rules of the present invention are particular to the problem of how to select, mark up, group, and nest raw relational data while using an XML query language as the means to request and generate the desired resulting XML document, and are neither taught nor suggested, alone or in combination by the cited prior art references. Monday only deals with "data objects" as input data (like Java Beans). Chen deals only with XML as input data. Neither Monday nor Chen discuss the use of an XML query language for requesting and generating the desired XML document. The Examiner has not responded to these arguments during prosecution, except to repeat the rejections.

Insofar as references may be combined to teach or suggest a particular invention, the individual references themselves or corresponding prior art must suggest that they be combined. For example, in In re Sernaker, 217 USPQ 1, 6 (CAFC 1983), the court stated: "[P]rior art references in combination do not make an

invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings." Furthermore, the court in Uniroyal, Inc. v. Rudkin-Wiley Corp., 5 USPQ.2d 1434 (CAFC 1988) stated "[w]here prior-art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself...Something in the prior art must suggest the desirability and thus the obviousness of making the combination."

In the present application, the reasons given to support the proposed combination are not sufficient to meet the obviousness standard. Applicants assert the Examiner has simply not met the burden of establishing a prima facie case of obviousness. As declared by the Federal Circuit:

"In proceedings before the U.S. Patent and Trademark Office, the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art. The Examiner can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." In re Fritch, 23 USPQ.2d 1780, 1783 (Fed. Cir. 1992) citing In re Fine, 5 USPQ.2d 1596, 1598 (Fed. Cir. 1988).

The Federal Circuit also went on to state:

"The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification...Here the Examiner relied upon hindsight to arrive at the determination of obviousness. It is impermissible to use the claimed invention as

an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." Fritch at 1784-85, citing In re Gordon, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

Here, there is no suggestion that Monday, either alone or in combination with Chen teaches the limitations of the claimed invention. Consequently, there is absent the "suggestion" or "objective teaching" that would have to be made before there could be established the legally requisite "prima facie case of obviousness".

In view of the foregoing, Applicants respectfully submit that the cited prior art references, either separately or in combination, do not fairly teach or suggest the features defined by claims 14-16 and 35-37, and thus those claims are patentable. These dependent claims are patentable over the cited prior art references, not only by virtue of their dependency from respective patentable independent claims, but also by virtue of the additional patentable features of the invention they define.

Applicants believe all claims are properly supported in the specification and accompanying drawings, and are patentably distinct from the prior art of record and are in condition for allowance. Thus, Applicants respectfully request that the rejection of all appealed claims be overruled.

(8) Appendix

1. (Original) A method of publishing relational data as XML, comprising the method steps of:

mapping a number of relational database tables to a number of virtual XML documents;

issuing XML queries over said virtual XML documents;

parsing said XML queries;

transforming said XML queries into a language-neutral intermediate representation;

rewriting said language-neutral intermediate representation into an equivalent form easily translated into an SQL query;

translating said equivalent form into an SQL query over said relational database tables and into tagging instructions passed to a tagger;

executing said SQL query to produce SQL query results passed to said tagger; and

generating XML output using said SQL query results and said tagging instructions.

2. (Original) The method of claim 1 wherein said method operates over a distributed computing network.

3. (Original) The method of claim 2 wherein said method operates over the Internet.

4. (Original) The method of claim 1 wherein said mapping step operates recursively.

5. (Original) The method of claim 1 wherein said mapping step operates manually.

6. (Original) The method of claim 1 wherein said mapping step maps said relational database tables to said virtual XML documents in a one-to-one manner.

7. (Original) The method of claim 1 wherein said language-neutral intermediate representation includes a sequence of operations describing:

how to select and relate data from said relational database tables; and

how to construct and group new XML elements from data bindings.

8. (Original) The method of claim 7 wherein said transforming step operates on at least one said relational database table and produces at least one output table.

9. (Original) The method of claim 7 wherein said operations include BIND operations.

10. (Original) The method of claim 7 wherein said operations include SELECT operations.

11. (Original) The method of claim 7 wherein said operations include CONSTRUCT operations.

12. (Original) The method of claim 7 wherein said operations include JOIN operations.

13. (Original) The method of claim 7 wherein said operations include GROUP operations.

14. (Original) The method of claim 7 wherein said operations include NEST operations.

15. (Original) The method of claim 1 wherein said rewriting step includes the further steps of:

eliminating both S and B whenever S is followed by a BIND operation B, where S denotes the sequence of CONSTRUCT, GROUP, and CONSTRUCT operations following a table access for a default view of a table T, leaving just the table access for T; and

replacing N by a JOIN operation, followed by S and a new GROUP operation which performs the child grouping that was previously done by N, where N denotes a NEST operation and S denotes any sequence of CONSTRUCT and GROUP operations for the child input of N.

16. (Original) The method of claim 1 wherein said rewriting step may operate repeatedly for deeper levels of nesting.

17. (Original) The method of claim 1 wherein said tagger operates outside an RDBMS.

18. (Original) The method of claim 7 wherein said operations describing how to select and relate data are translated into an SQL query that establishes selection criteria and required relationships among data.

19. (Original) The method of claim 7 wherein said operations describing how to construct and group new XML elements are translated into said tagger instructions.

20. (Original) The method of claim 19 wherein said operations are reordered to be performed last.

21. (Original) The method of claim 19 wherein said language-neutral intermediate representation serves as said tagging instructions.

22. (Original) A system for publishing relational data as XML, comprising:

a schema mapper for mapping a number of relational database tables to a number of virtual XML documents;

an XML-QL engine for issuing XML queries over said virtual XML documents;

a parser for parsing said XML queries and for transforming said XML queries into a language-neutral intermediate representation;

a rewrite engine for rewriting said intermediate representation into an equivalent form easily translated into an SQL query;

a translator for translating said equivalent form into an SQL query over said relational database tables and into tagging instructions;

an RDBMS for executing said SQL query to produce SQL query results; and

a tagger for generating XML output using said SQL query results and said tagging instructions.

23. (Original) The system of claim 22 wherein said system operates over a distributed computing network.

24. (Original) The system of claim 23 wherein said system operates over the Internet.

25. (Original) The system of claim 22 wherein said schema mapper operates recursively.

26. (Original) The system of claim 22 wherein said schema mapper operates manually.

27. (Original) The system of claim 22 wherein said schema mapper maps said relational database tables to said virtual XML documents in a one-to-one manner.

28. (Original) The system of claim 22 wherein said language-neutral intermediate representation includes commands controlling how said system:

selects and relates data from said relational database tables; and.

constructs and groups new XML elements from data bindings.

29. (Original) The system of claim 28 wherein said parser operates on at least one said relational database table and produces at least one output table.

30. (Original) The system of claim 28 wherein said system performs BIND operations.

31. (Original) The system of claim 28 wherein said system performs SELECT operations.

32. (Original) The system of claim 28 wherein said system performs CONSTRUCT operations.

33. (Original) The system of claim 28 wherein said system performs JOIN operations.

34. (Original) The system of claim 28 wherein said system performs GROUP operations.

35. (Original) The system of claim 28 wherein said system performs NEST operations.

36. (Original) The system of claim 22 wherein said rewrite engine:

eliminates both S and B whenever S is followed by a BIND operation B, where S denotes the sequence of CONSTRUCT, GROUP, and CONSTRUCT operations following a table access for a default view of a table T, leaving just the table access for T; and

replaces N by a JOIN operation, followed by S and a new GROUP operation which performs the child grouping that was previously done by N, where N denotes a NEST operation and S denotes any sequence of CONSTRUCT and GROUP operations for the child input of N.

37. (Original) The system of claim 22 wherein said rewrite engine may operate repeatedly for deeper levels of nesting.

38. (Original) The system of claim 22 wherein said tagger operates outside an RDBMS.

39. (Original) The system of claim 28 wherein said system translates commands describing how to select and relate data into an SQL query that establishes selection criteria and required relationships among data.

40. (Original) The system of claim 28 wherein said system translates commands describing how to construct and group new XML elements into said tagger instructions.

41. (Original) The system of claim 40 wherein said commands are reordered to be performed last.

42. (Original) The system of claim 40 wherein said language-neutral intermediate representation serves as said tagging instructions.

43. (Original) A system for publishing relational data as XML, comprising:

means for mapping a number of relational database tables to a number of virtual XML documents;

means for issuing XML queries over said virtual XML documents;

means for parsing said XML queries and for transforming said XML queries into a language-neutral intermediate representation;

means for rewriting said intermediate representation into an equivalent form easily translated into an SQL query;

means for translating said equivalent form into an SQL query over said relational database tables and into tagging instructions;

means for executing said SQL query to produce SQL query results; and

means for generating XML output using said SQL query results and said tagging instructions.

44. (Original) A computer program product comprising a machine-readable medium including machine-executable instructions therein for publishing relational data as XML comprising the steps of:

mapping a number of relational database tables to a number of virtual XML documents;

issuing XML queries over said virtual XML documents;

parsing said XML queries;

transforming said XML queries into a language-neutral intermediate representation;

rewriting said language-neutral intermediate representation into an equivalent form easily translated into an SQL query;

translating said equivalent form into an SQL query over said relational database tables and into tagging instructions passed to a tagger;

executing said SQL query to produce SQL query results passed to said tagger; and

generating XML output using said SQL query results and said tagging instructions.

Respectfully submitted,

Michael James Carey et al.

By Marc D. McSwain

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